COAL BEDS IN FAYETTE COUNTY, PENNSYLVANIA

By

J. D. Sisler

Introduction.

Coal was first discovered and burned in Fayette County in 1759. From that early date production has steadily increased until the county is the largest producer of bituminous coal in Pennsylvania. This pre-eminence is due to the easy accessibility of large acreages of Pittsburgh coal, to its supreme quality as a gas; steam, and coking coal, and to ample transportation facilities, both by water and rail.

In 1918 Fayette County produced 32,925,868 tons of coal valued at $72,818,426; of this total 11,551,224 tons, valued at $26,322,114 were loaded at the mines for shipment; 343,083 tons were sold to local trade and used by employees; 758,096 tons were used at the mines for steam and heat; 20,288,485 tons having a total value of $44,100,486 were made into coke at the mines. For many years Fayette County has produced more than twice as much coke as any other county in the State. The county also leads all other coke producing districts in the United States.

Fourteen coal beds in the county are locally mineable. More than twenty other coals are not mineable. The importance of the Pittsburgh bed has so overshadowed the other beds in the county, that they are little developed. With the steadily approaching exhaustion of the Pittsburgh bed, these thinner coals will gradually assume importance, and will finally furnish the entire output of the county. This state of affairs has been long recognized, but it is only in the last few years that any considerable prospecting of
these beds has been done. Even at the present time there are areas principally in the coals of the Allegheny formation in which little prospecting has been done.

Fayette County is bounded on the north by Westmoreland County; on the east by Somerset County; on the south by West Virginia and Maryland; and on the west by Greene and Washington counties. Its area is 824 square miles; its greatest length is 35 miles, and its greatest width is 30 miles. Its population in 1920 was 188,104.

The county has a network of steam railroads. The Baltimore and Ohio Railroad follows the east bank of Youghiogheny River across the county and with its branches opens up the district on the east side of the river. It gets some coal by chutes and aerial trams from the west side of the river. The Connellsville-Clarksburg branch of the Baltimore and Ohio Railroad opens up large fields in the southern part of the county. The Pennsylvania Railroad has many lines throughout the county. The Monongahela Division follows Monongahela River along the entire west boundary of the county; the Fairchance-Greensburg Division with its branches reaches many mining localities in the central part of the county. The main line of the Western Maryland Railroad follows the west bank of Youghiogheny River from Confluence to Connellsville, where it connects with the Pittsburgh and Lake Erie Railroad which follows the Youghiogheny to Pittsburgh. The Pittsburgh and Lake Erie Railroad runs along the Monongahela River between Pittsburgh and Brownsville.

Monongahela River has been used extensively since 1841 for the transportation of coal mined in Fayette County.

Fayette County has many improved roads and many miles of dirt roads that are kept in good condition. During war time much coal was hauled to sidings for shipment. At present very little coal is hauled over the highways for shipment by railroad.

The country east of the western base of Chestnut Ridge is a series of long narrow ridges, roughly parallel, having a general northeast-southwest trend, and separated by rather wide valleys much dissected by mountain streams. Elevations of 2800 feet are common on Laurel Ridge. Viewed from these high points the region to the west appears to be a featureless plain. It is in reality, a country of rolling land and numerous hills with gentle slopes, ranging from 1200 to 1300 feet in elevation; a much dissected peneplain. The slopes are steep where the streams have entrenched themselves or cut across anticlines. Youghiogheny River has cut a deep gorge across the Ligonier Valley. Remnants of old stream terraces and channels line the slopes of the Monongahela.

STRUCTURE.

There are ten major structural features in the county, each affecting the position of the coal beds. These are, in order from east to west: Laurel Hill anticline, Ohiopyle syncline, Chestnut Ridge anticline, Elliottsville syncline, Dulaney anticline, Uniontown
syncline, Fayette anticline, Lambert syncline, Brownsville anticline, and Port Royal syncline. Each structure has a northeast-southwest trend.

The structure contours of the county were originally drawn on the top of the Pottsville sandstone and the bottom of the Pittsburgh coal because of the uniformity and persistence of those rocks throughout the county.

The Laurel Hill anticline, a great fold at the eastern edge of the county, brings to light the erosion-resisting members of the Mississippian series, with resulting rugged mountain topography of steep slopes and deep narrow valleys. Its axis is well defined, and plunges rapidly to the southwest, with a resulting steep dip into the syncline on the northwest.

The Ohiopyle syncline, the southern extension of the Ligonier syncline, is a well defined basin. On the southern part of this basin the rocks rise gently to the southeast. Northeast at Confluence the slopes become rapidly steeper. Its axis tails out just north of Elliottsville, and the Chestnut Ridge anticline begins near the same locality. The slopes west of the basin are regular and gentle.

The Chestnut Ridge anticline makes its appearance just north of Elliottsville, as a minor fold, with gentle slopes. Near Youghiogheny River the slopes increase; the axis is level, and the slopes are about equal on both flanks. North of the Youghiogheny the fold is greater, and forms the highest structural feature west of Laurel Hill anticline. Altitudes of 2300 feet above sea on the Pottsville sandstone are common.

The Elliottsville syncline, a minor structure associated with the Ohiopyle syncline, extends north from West Virginia, just west of Elliottsville, to a point south of Youghiogheny River where it fades out between the Chestnut Ridge and Dulaney anticlines. Its eastern slope is very gentle; on the western slope the rocks rise 600 to 700 feet to the mile and form the Dulaney anticline.

The Dulaney anticline, the next structural feature to the west, is a minor fold where it originates just across the State line in West Virginia; its axis rises rapidly to the northeast until the Pottsville sandstone has an altitude of 3200 feet on the axis of the fold south of the Summit. Toward Youghiogheny River the fold gradually widens and the slopes become low and gradual.

The Uniontown syncline, forming the well-known Connellsville basin in Fayette County, is the largest structural feature in the county west of the Chestnut Ridge anticline. The deepest part of this basin is 3½ miles northeast of Uniontown, where the Pittsburgh coal is 550 feet above sea level and 600 feet below the highest hill tops. The basin is unsymmetrical in cross section. The eastern flank is narrow and the slope steep; the western flank is wider, and the slope more gentle. The bottom of the basin is flat, and has a maximum width
of about $1\frac{1}{2}$ miles. The axis rises toward the south. The northern end is rounded and canoe-shaped.

The Fayette anticline forms the western flank of the Connellsville basin. This fold gradually increases northward across the county, and reaches its maximum development in Youghiogheny River area. Its greatest altitude of 1800 feet is reached on the Fayette-Westmoreland county line, just northwest of Tyrone Mills on Jacobs Creek. The slopes on both flanks are gentle.

The Lambert syncline, lying west of the Fayette anticline, is a basin somewhat deeper but not as regular as that formed by the Uniontown syncline. The Lambert syncline originates in Greene County and deepens toward the north to its greatest depth just west of New Salem, where the Pittsburgh coal lies at an elevation of 450 feet above sea. The rocks rise rapidly on the east to the crest of the Fayette anticline; on the west the slopes are more gentle.

The Brownsville anticline is a minor structure composed of a series of elongated domes along a common axis. The Pittsburgh coal has an altitude of 800 feet at Brownsville and at Gillespie north of which place the axis plunges sharply.

The southern tip of the Port Royal syncline extends into the county, but is an unimportant structural feature.

STRATIGRAPHY.

The Quaternary, Carboniferous, and Devonian systems have outcropping members in Fayette County. The Quaternary is represented by recent sand, clay and gravel deposits along river banks and terraces; the Carboniferous system is represented by both the Pennsylvanian and Mississippian series of sedimentary rocks, comprising shales, clays, sandstones, limestones, and coals. The outcrops of Devonian rocks are limited to the Catskill formation, composed of olive green and red shales.

The Pottsville, Allegheny, Conemaugh, Monongahela, Washington, and Greene formations of the Carboniferous system are all coal bearing.

The Washington and Greene formations are present where the Uniontown and Lambert synclines have deeply buried the lower rocks. These formations are composed of shaly sandstone and sandy shale, with numerous thin limestones, and several coal beds, some of which are workable. In Greene County the maximum thickness of these formations is 1100 feet. In Fayette County, however, only 400 feet is present, the remainder having been eroded.

The Monongahela formation is composed of calcareous shales, sandstones, limestones, and coal beds. It has been eroded over large parts of the county. Its maximum thickness is 400 feet where it remains intact under the Washington formation.
The Conemaugh formation is present in two-thirds of the county and outcrops on the flanks of the structural folds. This formation is composed of shales, limestones, sandstones and many coal beds, few of which are mineable. Its average thickness is about 580 feet.

The Allegheny formation is present over the entire county with the exception of spots on the anticlines where it has been eroded. It has an average thickness of 270 feet and is composed of sandstones, shales, limestones, and several valuable coal beds, associated with clays which are sometimes valuable.

The Pottsville formation is composed of two massive sandstones, variable in thickness, with shale and one unimportant coal between them. Its maximum thickness rarely exceeds 100 feet.

The Devonian rocks have a limited outcrop on the largest anticlines. They are not coal bearing.

COALS.

The correlation of the coals in Fayette County is based on the reports of the Second Pennsylvania Geological Survey, and the Mason-town-Uniontown and the Brownsville-Connellsville folios published by the United States Geological Survey. These reports were made when the Pittsburgh coal was the only bed being mined commercially, and more attention was paid to it than to the other coal beds. Since these reports were published no detailed geological work has been done. The writer recently made a reconnaissance of the newly developed areas. The correlations in this report, therefore, are subject to revision when a detailed re-survey of the economic resources of the county is made. However, with the well known Pittsburgh coal as a datum, the correlations of the other beds may be assumed as reasonably correct.

Mercer Coal. The Mercer coal has a limited outcrop in the county. It is best exposed along Woughiogheny River, where it averages less than 12 inches, but locally is over 2 feet thick. Openings made for local use are now fallen shut. The bed was opened at Wharton Furnace on Chaney Run to make coke for use in the old furnace but the coke was poor. On Braddock Run the coal has a maximum thickness of 4 feet, but is dirty at the top. It has possibilities as a domestic fuel east of the Chestnut-Laurel ridge in the vicinity of the National Pike. A coal bed which has been prospected 2½ miles south of Tyrone Mills in the northern part of the county is 4 feet thick including two thin bone partings, and is believed to be the Mercer coal. This coal, reported in several drillings, varies from a few inches to 4 feet thick. The coal is high in ash and sulphur; its fixed carbon and volatile matter are medium.

Brookville-Clarion Coal. A bed about 30 feet above the Homewood sandstone and called the Brookville-Clarion coal for lack of better correlation, is locally a good clean coal of mineable thickness. It changes within a few hundred feet to an impure coal, extremely high
in ash and sulphur, carrying numerous clay partings that make it unmineable. Where at its best it is a low sulphur, low ash coal, fairly high in fixed carbon.

The bed is thickest and cleanest on the west side of the Chestnut-Laurel ridge where it was used in the furnaces in the early days of the iron ore industry in Fayette County. It was opened on Cheat River where it occurred in two benches; a top one 2 feet 6 inches thick, separated by nearly 4 feet of iron ore from a lower bench 18 inches thick. It was also mined many years ago in West Union township, and measured 8 feet 5 inches, including two clay partings, 1 and 3 inches thick. The coal had fair quality, medium in ash, fairly high in sulphur, and rather high in fixed carbon.

Along the Youghiogheny the Mercer coal is clean but varies from a few inches to 3 feet in short distances. On Bear Run it is 2 feet 8 inches thick; at Ohiopyle 2 feet 2 inches, at Oakland 18 inches to 2 feet thick. The bed appears to be thin but persistent on and east of Chestnut-Laurel ridge.

A coal bed 3 to 6 feet thick at the horizon of the Mercer has been noticed on Jacobs Creek but it has never been mined.

Lower Kittanning Coal. Except in the Confluence-Indian Creek district, the Kittanning coals are deeply buried, and little is known of their thickness or quality. Large areas remain untested, and the correlation of the beds is uncertain.

The Lower Kittanning coal averages less than 2 feet thick where it has been recognized in the county. It is thickest and best on Indian Creek, where it is mined extensively for shipment as a steam coal. The bed averages 3 feet 8 inches thick, and contains an average of 3 percent sulphur. The roof commonly is shale, with an average of 5 inches of boney coal beneath it. This boney coal is separated from the main coal by a bone parting 1 inch thick. The main coal locally has one or two bone binders from 1 to 2 inches thick near the center of the bed. The coal is medium in hardness and mines out in sticks, because of its closely spaced columnar cleavage planes. The coal varies from 1.8 to 8 percent sulphur, and from 4.1 to 20.8 percent ash.

The bed is mined in the vicinity of Dunbar where it occurs in two benches, a top one of good clean coal 2 feet 2 inches thick separated from a lower bench by a thin bone or clay parting. The lower bench is 14 inches thick; the coal is hard but has many "sulphur bands". A 6 foot bed of clay directly underlyng it is mined for brick making.

The coal is thin and very impure in many places, but future prospecting may discover areas where it can be mined profitably.

Middle Kittanning Coal. This bed is rarely mineable and in large areas is entirely absent. It is 3 feet thick on Jonathan Run, where it has been mined for house coal.
Upper Kittanning Coal. This coal is present in several townships but is workable only in the Confluence-Indian Creek district, and in isolated tracts in the central and western parts of the county. The coal is more or less dirty, carrying either bone or clay partings, or several inches of honey coal at the top of the bed. The presence of "sulphur balls" locally makes it very high in sulphur. The ash varies from 2.5 to 13 per cent.

The Upper Kittanning is the most valuable and the only bed mined in the Confluence area. It is mined by drift along its outcrop on Youghiogheny River. It is characteristically a double bed, with a fire clay parting 6 inches to 6 feet thick. The upper bench of good coal ranges from 1 foot 6 inches to 3 feet thick. The lower bench is from 1 foot to 2½ feet thick, and is rather high in sulphur.

In the vicinity of Ohio Valley the bed is 2 to 3½ feet thick, has many thin bone partings, and although very clean locally, it varies much in quality.

In the vicinity of Dunbar the Lower Kittanning is a single bed averaging 2½ feet thick. The bottom clay is 6 feet thick in some places and is mined with the coal for making brick.

The coal outcrops in many other localities and ranges from a few inches to 4 feet in thickness. Where thickest it carries several bone or shale partings which lessen its value. The Upper Kittanning in most places is better than the Lower Kittanning. The sulphur content averages less than 3 percent, and the ash around 7 percent. The fuel ratio is always about 5.

Lower Freeport Coal. This is the most irregular bed in the Allegheny Formation in Fayette County. It ranges from a few inches to 5 feet in thickness, carries bone or clay partings and never is clean. Where thickest the partings are numerous.

This bed has been mined on Indian Creek, where its maximum thickness is 5 feet, including at least two binders having a total thickness of over 1 foot. The top bench, usually 3 feet thick, is good coal. The lower bench is seldom mined. Several mines were opened in this bed when the prices of coal were high, but it is doubtful if the small mines can be operated at a profit in normal times.

The bed is thin and worthless almost everywhere in the Igonier Valley, its average thickness being less than 1½ feet.

West of the Chestnut-Laurel ridge the bed is thicker, but is mineable in few places. It is a thick bed in several townships, but three clay partings destroy its value.

At Dunbar the bed averages 30 inches thick, and carries a two inch bone binder about 5 inches from the top. It is difficult to separate this binder from the coal. The coal is very low in sulphur, but high in ash.
The bed is usually concealed in the southern part of the county, but on Little Sandy Creek it is a good coal 4 feet thick. It is very thin in the northern part of the county and is never opened.

Upper Freeport Coal. This bed is the most persistent of the Allegheny coals in Fayette County. Its thickness varies from a few inches to 6 feet; it also varies from a clean coal to a coal with many partings and high in iron pyrite. It is a well known bed in the eastern and central parts of the county where it outcrops, but in the western part of the county where it is deep under cover, it is known only from drill records.

Many openings have been made recently in this bed in Henry Clay and Stewart townships. The coal shows great variation in quality and thickness, but in most places is in two benches separated by 6 inches to 4 feet of fire clay. The top bench varies from \( \frac{3}{4} \) to 3 feet, and the lower bench from 1 to \( \frac{5}{2} \) feet thick. Locally two or more bone partings appear in the coal in addition to the main clay parting. Large areas in Springfield and Saltlick townships are yet unprospected, but may contain some mineable tracts.

The Upper Freeport coal has been opened in a great many places in the central part of the county. In Springhill, Georges, Wharton, Dunbar and North and South Union townships, the bed averages about 4 feet thick, but has several thick bone and clay partings. Locally, however, it is thinner and cleaner. At Dunbar the bed averages 4 feet 2 inches thick, but carries many partings near the top and bottom. There is 30 inches of good clean coal in the middle of the bed. North of the Yougiiogheny the bed varies from 3 to 7 feet thick, and is best at South Connelsville where it is 7 feet 2 inches thick, with only three very thin bone partings.

Drill records indicate that the Upper Freeport coal is lenticular, but is thick and excellent in some of the townships bordering the Monongahela.

This coal ranges from 1.5 to 4 percent in sulphur, and from 6 to 15 percent ash, depending upon the amount of impurities left in the coal after it is mined. When the Pittsburgh coal has been worked out this bed will assume importance, as it is a fair steam coal. It does not make satisfactory coke.

Conemaugh Coals. The correlation of the Conemaugh coals is most vague and this Survey will attempt none until detailed studies of the limestones and their faunas have established the real identity of the beds. In the absence of better designations, local names will be used.

Farmington Coal. This coal, 65 feet above the Upper Freeport, is 3 feet thick at the town of Farmington in Wharton township. On Jonathon Run northeast of Youghiogheny River this bed averages 2 feet, and is even thicker in southern Wharton township where it carries several bone and clay partings. It has no commercial value at present.
Hager Coal. This bed, lying about 180 feet above the Upper Freeport, has been mined in the vicinity of Hager Hill where it is 3 feet thick. On Tharp Knob south of Youghiogheny River it is 5 to 7 feet thick, but contains several bone partings. It was once mined for local use on Redstone Creek.

Barton Coal. This bed, found about 115 feet above the Ames limestone, was mined years ago near Wharton Furnace in Wharton township where it varies from 18 inches to 4 feet thick. Elsewhere it is not mineable and in some large areas is absent.

Pittsburgh Coal. The Pittsburgh coal in Fayette County is naturally divided and can be conveniently discussed in two natural districts or basins, the Uniontown-Conelvelsville district and the Monongahela River district. Differences in quality and physical character of the coal are marked in the two districts.

Pittsburgh Coal in the Uniontown-Conelvelsville District.

The Pittsburgh coal in this district ranges from 8 to 11 feet thick. It is unusually clean, and carries but one persistent bone binder varying from 1/2 to 3 inches thick, about 18 inches from the bottom. In many places several bone partings averaging less than 1/2 inch, separate the benches in the lower division. The upper division is present, but is not as characteristic of the bed as in the river district. It is left on the roof to insure safety; sometimes a few inches of top coal from the lower division is also left for safety. The floor is remarkably uniform and free from "rolls."

The coal has alternating dull resinous and bright shiny streaks, and contains numerous small lenses of bone, and some pyrite; it is compact, tends to break into cubes; is tender, and falls apart with handling. The latter character is not objectionable, as it puts the coal in the best form for thorough coking. The Pittsburgh coal in the Conelvelsville basin is also used successfully as a steam coal.

To avoid a long discussion by townships, a table showing the general average thickness of the bed in the townships included in this district, has been compiled from a great number of sections. Locally the coal may vary as much as a foot from these generalized sections, but in the main they illustrate the representative thickness of the bed.

<table>
<thead>
<tr>
<th>Township</th>
<th>Roof Division</th>
<th>Clay</th>
<th>Lower Division</th>
<th>Coal in Roof Division</th>
</tr>
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<tr>
<td>Springhill</td>
<td>4</td>
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<td>6</td>
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<td>Georges</td>
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<td>8</td>
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<td>North Union</td>
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<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Connellsville</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
North of Cheat River the bed is double, but its roof division is not mineable, being composed of alternating layers of coal and clay.

The lower division is free from impurities with the exception of small lenses of bone coal and two thin binders that are sometimes present.

The chief difficulty in mining comes from a poor roof and occasional swells in the soft clay bottom.

**COKE.**

The Connellsville coke region in Fayette County embraces an area 25 miles long by 2½ miles wide, containing 60 to 75 square miles. The Pittsburgh coal in this region has earned a reputation as the standard coking coal in the world.

The production of coke in this area began in 1859 with the successful trial of this fuel at the Pittsburgh furnace of Graff, Bennett and Company. In 1860 there were 70 beehive ovens in operation in the district.

The coke from this region has a silvery lustre, metallic ring, is cellular, tenacious, comparatively free from impurities, and is capable of bearing a heavy burden in the furnace. Its hardness, well developed cell structure, purity, and uniform quality have given it a great reputation as a blast furnace coke. The average yield in coke is 65 per cent.

**Pittsburgh Coal in the River District.**

The Pittsburgh bed is primarily a gas coal in the River District although it is also used successfully as a steam and by-product coking coal.

The roof division is invariably present in this district, thickens to the north and is mineable locally. It ranges from 1 to 7 feet thick and is composed of alternating layers of coal and clay.

The lower division commonly is 7 to 9 feet thick, and is almost always divided by thin bone partings into four benches, the "Breast", the "Beering-in", the "Brick", and the "Lower Bottom" coal. The "Breast" coal is the main part of the bed, averaging about 5 feet 6 inches thick. Bad roof conditions at times force operators to leave as much as 14 inches of this coal at the top to hold the roof. In some places the "Brick" and "Lower Bottom" coal are impure and are left as a floor. In most mines the entire lower division is mined. The lower division thins northward to the Youghihogheny.

The lower division of the Pittsburgh bed averages about 9 feet thick in German, Menallen, Redstone, and Luzerne townships; in Nicholson and Brownsville townships the average is slightly lower.
In the central part of Jefferson, the western part of Perry, and the southeastern part of Washington townships it averages about 8½ feet. In the western part of Jefferson and Washington townships, and in Lower Tyrone township the average thickness is 7 feet.

Redstone Coal. The correlation of this bed and of the Sewickley coal above it, is uncertain in several areas, and only tentative until more detailed geologic work can be done. These beds are very banticulier, irregular, and poorly exposed. Their distance above the Pittsburgh bed appears to differ from place to place. Beds ranging from 40 to 126 feet above the Pittsburgh coal have been correlated as the Redstone.

The Redstone coal commonly is about 60 feet above the Pittsburgh bed. Although extremely variable in thickness, it is a valuable bed locally, and is mined for domestic use in several places. With the exhaustion of the Pittsburgh bed, it will assume some importance as a shipping coal. It is hard, and mines out in fair sized lumps; it is rather high in sulphur and ash.

At Lemont air shaft the coal is 4 feet thick; at Hill Farm 3 feet, and at Leith shaft 5 feet 7 inches thick. It carries several very thin bone partings that lessen its value. South and southwest of Uniontown the bed has been opened for domestic use and averages about 3 feet thick. Many thin lenses of bone, and "knife blades" of pyrite make its ash and sulphur rather high. In Springhill township the bed averages 4¼ feet thick and is mined for house coal. It is poor in quality, and will probably never be valuable as a shipping coal.

The Redstone coal is persistent in the river district, but averages less than 2 feet thick. Where the bed thickens, partings of shale and bone make mining unprofitable except for house coal.

Sewickley Coal. A coal 120 to 175 feet above the Pittsburgh bed, is opened at many places both for domestic and shipping coal. This bed varies from a few inches to 6 feet in thickness. As a rule it is very dirty and impure, but locally where thick has excellent quality and commercial mines have been opened in it. The bed is variable in its physical and chemical qualities. Its sulphur will average about 3½ per cent, and its ash about 11 per cent. The volatile matter is very high. Washing and picking make it an excellent steam coal.

In the vicinity of Masontown the Sewickley coal has a maximum thickness of 6 feet, and averages 5 feet 10 inches. A few inches at the top of the bed is a mixture of pyrite bands and coal, but the remainder is clean. At Fairchance the bed averages 4 feet 2 inches thick, with 5 inches of bone at the top, a ¼ inch binder 3 feet from the roof, and a ½ inch parting near the bottom. At Uledi it averages 4 feet 6 inches thick, with a 3/4 inch bone binder 2 feet from the bottom. Rolls in the clay floor make mining difficult. The coal is mined at many other places in the county, but variations in thickness and quality in a short distance make successful mining uncertain.
Uniontown Coal. This coal, lying 250 to 305 feet above the Pittsburgh bed, is thin and unimportant everywhere in the county. In the vicinity of Uniontown, where it furnishes a small supply of house coal, it is 3 feet 2 inches thick, including 4 inches of clay in the center of the bed. It has been recorded in many shaft sections and drill holes, but is seldom thick enough for mining.

Waynesburg Coal. This bed is unimportant in the Uniontown-Connelsville district, and has been opened in only a few places. It is mined in Dunbar township, where its maximum thickness is 3 feet 4 inches. A 3-inch bone binder, 13 inches from the bottom, cuts the bed into two benches. The coal is extremely high in ash, and rather high in sulphur.

The Waynesburg coal has been mined more extensively in the river district, but it is not persistent. On Redstone Creek the bed is locally 10 feet thick but is composed of alternating bands of coal and clay, where the bed is thinner the quality is better, and the coal is used for domestic fuel. On Dunlap Creek the bed is very impure. In the vicinity of Heistersburg and Merrittstown it averages 5 feet thick, and occurs in several benches, one of which is often clean enough to be mined. On Wallace Run the bed is 4 feet 5 inches thick, with a few inches of bone coal 12 inches from the roof. North of Masontown it is split by three clay partings, and is 7 feet 2 inches thick.

Waynesburg "A" Coal. This bed, lying about 60 feet above the Waynesburg coal, is thin but has good quality. It is almost entirely absent in the Uniontown-Connelsville district. In the river district it has been opened for house fuel. It is 3 feet 6 inches thick in the Lambert shaft section; on Middle Run 4 feet 6 inches, and on Antrim Run 3 feet thick. The coal thins within a few feet.

Washington Coal. The Washington coal is 2 feet 5 inches thick in Lambert shaft, and 141 feet above the Waynesburg. It rarely is over 2 feet thick in the county, and has never been mined.

Several other beds lying above the Washington coal are too thin to be mined in Fayette County.
<table>
<thead>
<tr>
<th>Coal bed</th>
<th>Average interval in feet</th>
<th>Average thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waynesburg &quot;A&quot;</td>
<td>100</td>
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<tr>
<td>Waynesburg</td>
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<td>2'3&quot;</td>
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<tr>
<td>Uniontown</td>
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<tr>
<td>Monongahela 375</td>
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<tr>
<td>Upper Kittanning</td>
<td>50</td>
<td>1'9&quot;</td>
</tr>
<tr>
<td>Middle Kittanning</td>
<td>70</td>
<td>0'9&quot;</td>
</tr>
<tr>
<td>Lower Kittanning</td>
<td>25</td>
<td>2'0&quot;</td>
</tr>
<tr>
<td>Brookville-Clarion</td>
<td>80</td>
<td>1'3&quot;</td>
</tr>
<tr>
<td>Pottsville 180 †</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pottsville sandstone Mercer</td>
<td>125</td>
<td>1'0&quot;</td>
</tr>
</tbody>
</table>